

## REMARKS

Independent claim 1 of the application has been amended to recite a minimum percentage of wool fibers present in the felt set forth previously in dependent claim 10 and other dependent claims now canceled. Claim 1 has also been amended to recite that the bleaching agent is a "reduction" bleaching agent previously recited in dependent claim 57, now canceled. Those and other dependent claims referring to those particular features of the invention have been canceled. Independent claim 1 has been amended in no other substantive respects, but only to clarify the claimed subject matter in certain limited aspects. Accordingly, it is believed that the amendments present no new issues for the Examiner's consideration and that the amendments are therefore proper and should be entered.

The claims now pending are claims 1, 3, 6, 7, 14-23, 29, 31, 52, 53, 55 and 56.

All of the pending claims stand rejected under 35 U.S.C §103(a) as being unpatentable over the admitted prior art tennis balls "Milliken's standard yellow felt (std. F/Y)" and "Milliken High Visibility Yellow felt (Hi. Viz. F/Y)" as disclosed in Applicant's specification on page 21 in view of Reinecke, "Woolbleiche etc., Reinert, US 5,074,885 and Schmidt, US 3,551,087.

The Examiner argues in support of the rejection:

"The Milliken ball is a conventional fluorescent dyed tennis ball composed of a wool/synthetic felt glued to a rubber sphere as claimed. The difference between the Milliken ball and the claimed invention is the color characteristics of lightness and reflectance."

The characterization of the prior art Milliken technology does not take into consideration that there are actually two Milliken prior art tennis balls relied upon, namely the Milliken standard yellow felt and the Milliken high visibility yellow felt. This is significant. The Milliken high visibility ball achieves high visibility by higher saturation of the dyestuff into the felt to achieve a higher chroma, see Figure 4, bar number 4, for the

Milliken high visibility chroma value. High visibility, however, is a function not only of chroma, but also of lightness and reflectance. As can be seen by reference to Figure 5, for the Milliken high visibility prior art product, higher chroma values are achieved, but at the expense of desired high lightness values (bar 4 in Figure 5) which are actually inferior to the standard Milliken ball (bar 5 in Figure 5).

The third characteristic responsible for high visibility in a tennis ball is reflectance. As can be seen by reference to Figures 2 and 3, reflectance even for the Milliken high visibility prior art product is significantly inferior to that for the tennis balls of the present invention (compare line 1 for the present invention to line 4 for the Milliken prior art high visibility tennis ball). Reflectance values for the tennis balls of the present invention are also clearly higher over a significant range of wavelengths for the tennis balls of the present invention, as compared to the standard, fluorescent yellow tennis balls of the prior art (line 5 in Figures 2 and 3). Accordingly, the two prior art Milliken tennis balls, one made with the standard yellow felt and the other with the high visibility yellow felt, would either taken alone or in combination with the other art of record, clearly not render obvious the tennis balls of the present invention, which exhibit higher visibility as evidenced by the combination of values of high chroma (saturation), superior reflectance values, and lightness values.

Thus, a proper assessment of the obviousness of the presently claimed tennis balls does not involve a "one-by-one" assessment of the three individual components of visibility, but rather must consider that optimum high values are unexpectedly achieved for not just one or two of the components, but for all three of the components that together contribute to enhanced visibility of the tennis ball, a much desired

characteristic. In re Glaug, 62 USPQ 2d 1151 (Fed. Cir. 2002) (Comparative data in the specification of the application that serves to point up distinction from the prior art, or advantages over the prior art, is relevant to patentability). In re Soni, 34 USPQ 2d 1684, 1687 (Fed. Cir. 1995) ("One way for a patent applicant to rebut a prima facie case of obviousness is to make a showing of 'unexpected results', i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected").

Neither can it be argued that enhanced visibility for a tennis ball is not a significant property for a tennis ball, and uniquely so for players, spectators and TV audiences. In fact, as can be seen in the attached exhibits A, B and C, the Milliken Ultra High Visibility tennis fabrics have been adopted for use on the Slazenger "Ultra Vis" tennis balls selected for the Wimbledon tennis tournament and have even been endorsed by Tim Henman (see Exhibit C) saying: "The Slazenger Ultra Vis ball is a true innovation. It really is a lot brighter, especially in fading light."

Neither do the teachings of the three secondary references relied upon by the Examiner supply the significant deficiencies of the primary references. In this regard, the Examiner relies upon Reinecke, Schmidt and Reinert. None of the secondary references relied upon by the Examiner teach that in the dyeing of the tennis felt used in the present tennis balls, enhanced visibility could be achieved by reduction bleaching the tennis felt prior to dyeing. Enhanced visibility of a tennis ball is not even recognized as a desired property in the teachings of the secondary references. Enhanced visibility of a tennis ball requires the use of a fluorescent yellow dye, not just any dye. Fluorescent yellow dyes uniquely absorb UV light and re-emit absorbed energy in the

visible area of the spectrum. The result is peak reflectance values in excess of 100% in the yellow area of the spectrum where the eye has its highest visual efficiency. The fact that the secondary references may recognize that a "beautiful" shade or a "bright" shade may be achieved for some other color, i.e. pale blue described by Schmidt or for some other ultimate application not connected with a tennis ball, lends no support to the rejection based upon obviousness.

In summary, the Patent and Trademark Office is requested to consider the combination of the values achieved for lightfastness, reflectance and chroma by means of the products of the present invention. It is respectfully submitted that the comparative data provided in the specification of the present application as filed is more than sufficient to support the non-obviousness and, hence, patentability of the presently claimed subject matter.

In the Official Action the Patent and Trademark Office has noted that the claims remain quite broad and that any showing of non-obviousness must be commensurate with the scope of the claimed subject matter. Accordingly, Claim 1 of the application has been further amended to recite that the percentage of wool in the felt of the tennis ball must be 40% or greater. Furthermore, the bleaching agent employed to make the fabric material used in the tennis balls is recited to be a reduction bleaching agent. This limitation provides a further distinction over, for instance, the Reinecke reference, which teaches that "in order to bleach wool to full lightness, it is normally treated in two stages of bleaching, generally oxidative first and then reductive, after intermediate rinsing. Reversing the sequence would lead to a less effective bleaching result . . . ." Reinecke, Section 3, page 5. Reinecke, therefore, teaches bleaching in two stages, a teaching

against both Applicant's invention and the single bleaching step taught by Schmidt. The deficiencies of Reinecke, in this regard, are fully explored in the amendment dated March 22, 2004, specifically on pages 8-10.

Neither does the Schmidt reference supply the deficiencies of the Reinecke reference. Schmidt, in this regard, teaches oxidative bleaching using performic acid (see Schmidt abstract in Column 1, lines 51-54). Oxidative bleaching and reductive bleaching are opposite chemical processes. In fact, rather than supplying the deficiencies of the primary references and Reinecke, Schmidt actually teaches away from the invention taught in new claim 1 as amended and all of the claims dependent thereon.

Furthermore, independent consideration of dependent claims 15, 16, 21 and 22 is requested. Those claims require that the fabric material of the tennis ball be contacted with a partitioning agent in the dyeing method. Claim 16 recites a specific partitioning agent to be used in the method, namely an aqueous solution of an alkyl-aryl sulfonate. Independent consideration of that claim is requested as well. The contacting of the fabric material of the tennis ball with a partitioning agent within the context of the present invention is significant because the materials are made with a mixture of at least 40% wool and also comprises synthetic fibers. The partitioning agent serves within the combination claimed to reduce or possibly even eliminate the difference in the uptake of the dyestuff between the wool and synthetic fibers.

Lastly, reference is made to the paragraph spanning pages 5 to 6 of the Official Action where the Examiner argues that the comparative testing results discussed above are "not significant." In support of this assertion, the Examiner quotes from US Patent

No. 5,470,058 directed to a high visibility game ball. It is submitted that the only relevant teaching of the '058 patent is that, in general, fluorescent yellow in the 500-550 nm range provides greater sensitivity to the human eye than fluorescent orange and red balls in the 600-650 nm range. The reference then goes on to report that, in fact, the standard orange ball, namely the prior art, has greater reflectance in the 500-600 nm range, namely the yellow range, than does the red ball. This is certainly not surprising, but neither is this teaching relevant to the present invention. The fact is, with regard to the present invention as detailed above, it is the combination of higher chroma values, highlight values, and reflectance in the critical area of the spectrum where the human eye is, as recognized in the '058 patent, most sensitive that achieves the high visibility results. This result is unexpected because the combination of three properties critical to visibility is achieved, not just one property or two properties. In response to the Examiner's rejection that the evidence of nonobviousness must be commensurate with the scope of the claimed invention, Applicant's have, in fact, referred to MPEP § 716.02(d). It is submitted that this section of the MPEP is wholly inapposite to the present invention. 706.02(d) pertains to claims covering a range and requires that the showing of unexpected results must be viewed to see if the results occur over the entire claimed range. In re Clemens, 206 USPQ 289,296 (CCPA 1980). Applicants are not claiming a range such as a process for removing corrosion at "elevated temperatures" as in Clemens. On the contrary, Applicant's are claiming certain minimal results that are achieved in terms of chroma, lightness, and reflectance, which accomplishes the unexpected high visibility for the tennis balls of the present invention. The experimental results, which are reported in the specification, support those minimum values because the results are equal to or higher than those values in the experimental

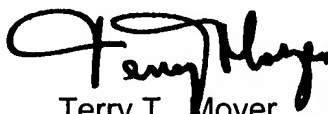
results provided. Additional experimentation is not required to support those results in the absence of any compelling evidence to the contrary. With regard to the Examiner's assertion that the data does not show how the prior art balls were constructed or dyed, it is submitted that such evidence is not typically available with regard to prior art. Applicant's fully disclose how the subject matter of the present invention is made; accordingly all the requirements of the patent laws with regard to disclosure are satisfied. In general, the tennis balls of the present invention are constructed with a fabric that is made by a process that involves reduction bleaching of the felt, having a particular construction, either prior to or simultaneously or quasi-simultaneously, with dyeing a fluorescent yellow color. The fluorescent yellow felts used in the manufacture of the prior art balls are not manufactured by a process that includes a reduction bleaching step as presently claimed and accordingly, these prior arts products may be differentiated on that basis. No further information is available and, in fact, it is submitted that no further information is required by the patent laws.

In view of the above amendments and accompanying comments, it is believed that the subject matter of the present application is now in condition for prompt and expeditious allowance and such action is earnestly solicited.

## CONCLUSION

The Commissioner is hereby authorized to charge any other fee as may be required for timely acceptance of the Amendment transmitted herewith and to credit any surplus to Deposit Account No. 04-0500. A duplicate copy of this sheet is enclosed.

Respectfully requested,



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